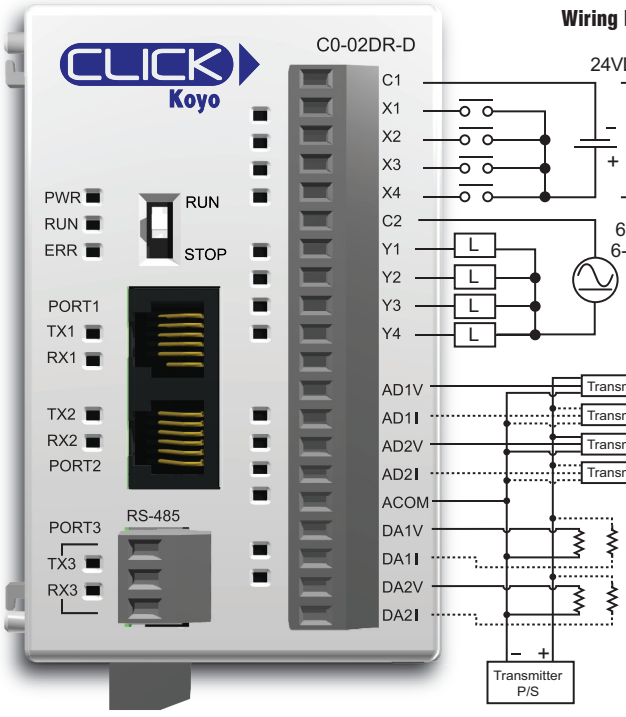
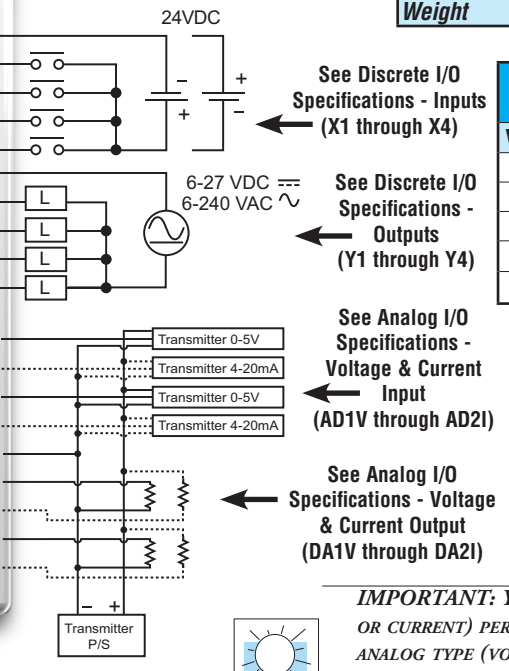
# Analog PLC

## C0-02DR-D $139.00

### 4 DC Input/4 Relay Output; 2 Analog In/2 Analog Out Micro PLC




**Wiring Diagram**




**See Discrete I/O Specifications - Inputs (X1 through X4)**

**See Discrete I/O Specifications - Outputs (Y1 through Y4)**

**See Analog I/O Specifications - Voltage & Current Input (AD1V through AD2I)**

**See Analog I/O Specifications - Voltage & Current Output (DA1V through DA2I)**

| General Specifications | |
|---|---|
| *Current Consumption at 24VDC* | 140 mA |
| *Terminal Block Replacement Part No.* | C0-16TB |
| *Weight* | 5.6 oz (160 g) |

| Typical Relay Life (Operations) at Room Temperature | |
|---|---|
| **Voltage & Load Type** | **Load Current: 1 A** |
| 30 VDC Resistive | 300,000 cycles |
| 30 VDC Solenoid | 50,000 cycles |
| 120 VAC Resistive | 500,000 cycles |
| 120 VAC Solenoid | 200,000 cycles |
| ON to OFF = 1 cycle | |

***NOTE:*** *When using Analog PLCs, you must use CLICK programming software version V1.12 or later.*

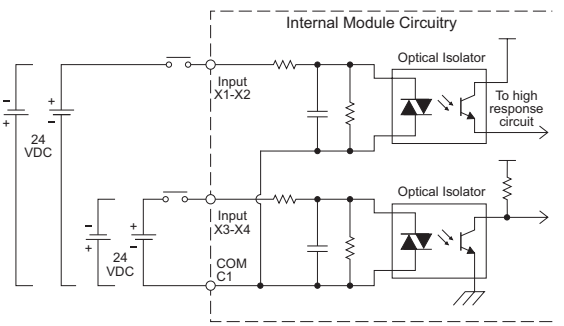
*IMPORTANT: You can use only one terminal (voltage or current) per channel. You must also select the analog type (voltage or current) in the CPU built-in I/O setup in the CLICK programming software (pull-down menu Setup > CPU Built-in I/O Setup).*

### X1 - X4

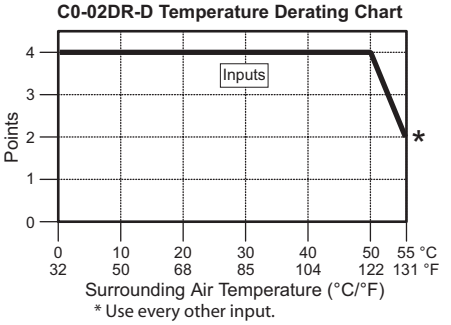
| C0-02DR-D Discrete I/O Specifications - Inputs | |
|---|---|
| *Inputs per Module* | 4 (Source/Sink) |
| *Operating Voltage Range* | 24 VDC |
| *Input Voltage Range* | 21.6 - 26.4 VDC |
| *Input Current* | X1-2: Typ 5 mA @ 24 VDC<br>X3-4: Typ 4 mA @ 24 VDC |
| *Input Impedance* | X1-2: 4.7 kΩ @ 24 VDC<br>X3-4: 6.8 kΩ @ 24 VDC |
| *ON Voltage Level* | X1-2: > 19 VDC<br>X3-4: > 19 VDC |
| *OFF Voltage Level* | X1-2: < 4 VDC<br>X3-4: < 7 VDC |
| *Minimum ON Current* | X1-2: 4.5 mA<br>X3-4: 3.5 mA |
| *Maximum OFF Current* | X1-2: 0.1 mA<br>X3-4: 0.5 mA |
| *OFF to ON Response* | X1-2: Typ 5 µs Max 20 µs*<br>X3-4: Typ 2 ms Max 10 ms |
| *ON to OFF Response* | X1-2: Typ 5 µs Max 20 µs*<br>X3-4: Typ 3 ms Max 10 ms |
| *Status Indicators* | Logic Side (4 points, green LED) |
| *Commons* | 1 (4 points/common) |

*** Threshold level is 70% amplitude.**

**Equivalent Discrete Input Circuit**




**C0-02DR-D Temperature Derating Chart**




**There are no *ZIP*Link pre-wired PLC connection cables and modules for the Analog PLCs. (Cannot mix discrete I/O and analog I/O signals in a *ZIP*Link cable.)**

# Analog PLC

## C0-02DR-D (cont'd)

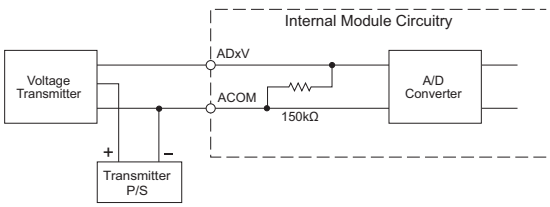
### Y1 - Y4

| C0-02DR-D Discrete I/O Specifications - Outputs | |
|---|---|
| Outputs per Module | 4 |
| Operating Voltage Range | 6-27 VDC6 (-15%/+10%)/ 6-240 VAC (-10%/+10%) |
| Output Type | Relay, form A (SPST) |
| AC Frequency | 47-63 Hz |
| Maximum Current | 1 A/point |
| Minimum Load Current | 5 mA @ 5 VDC |
| Maximum Inrush Current | 3 A for 10 ms |
| OFF to ON Response | < 15 ms |
| ON to OFF Response | < 15 ms |
| Status Indicators | Logic Side (4 points, red LED) |
| Commons per Module | 1 (4 points/common) |
| Fuse | None |

### AD1V - AD2I

| C0-02DR-D Analog Specifications - Voltage Input | |
|---|---|
| Number of Channels | 2 (voltage/current selectable) |
| Input Range | 0 - 5 VDC (6 VDC Max.) |
| Resolution | 12 bit |
| Conversion Time | 50 ms |
| Input Impedance | 150 kΩ |
| Input Stability | ±2 LSB maximum |
| Full-Scale Calibration Error | ±1.2% maximum |
| Offset Calibration Error | ±5 mV maximum |
| Accuracy vs. Temperature Error | ±100 ppm / °C maximum |

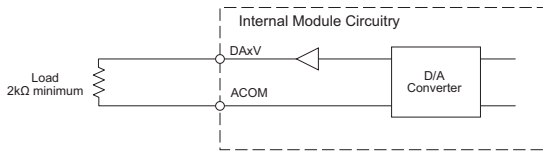
**Analog Voltage Input Circuit**



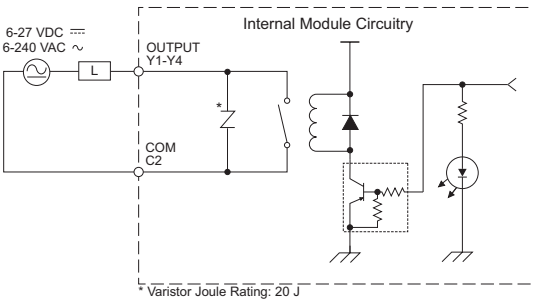

### DA1V - DA2I

| C0-02DR-D Analog Specifications - Voltage Output | |
|---|---|
| Outputs per Module | 2 (voltage/current selectable) |
| Output Range | 0 - 5 VDC |
| Resolution | 12 bit |
| Conversion Time | 1 ms |
| Load Impedance | 2 kΩ minimum (output current 2.5 mA maximum) |
| Full-Scale Calibration Error | ±0.8% maximum |
| Offset Calibration Error | ±5 mV maximum |
| Accuracy vs. Temperature Error | ±100 ppm / °C maximum |

**Analog Voltage Output Circuit**



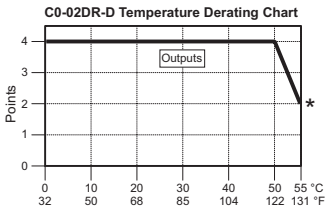

**Equivalent Output Circuit**




* Varistor Joule Rating: 20 J

This circuit does not contain built-in protection.
Install protection elements such as a fuse outside the module if necessary.

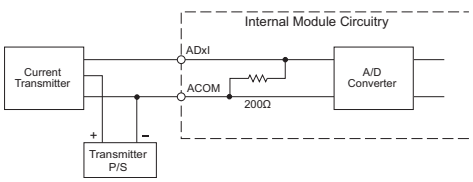
**C0-02DR-D Temperature Derating Chart**




* Use every other output.

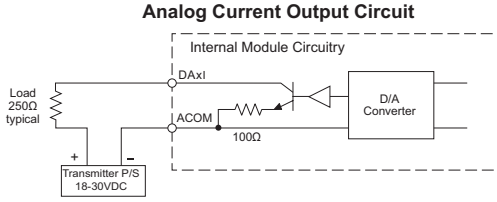
| C0-02DR-D Analog Specifications - Current Input | |
|---|---|
| Inputs per Module | 2 (voltage/current selectable) |
| Input Range | 4 - 20 mA (sink) |
| Resolution | 12 bit |
| Conversion Time | 50 ms |
| Input Impedance | 200 Ω |
| Input Stability | ±2 LSB |
| Full-Scale Calibration Error | ±1% maximum |
| Offset Calibration Error | ±0.1 mA maximum |
| Accuracy vs. Temperature Error | ±100 ppm / °C maximum |

**Analog Current Input Circuit**




| C0-02DR-D Analog Specifications - Current Output | |
|---|---|
| Outputs per Module | 2 (voltage/current selectable) |
| Output Range | 4 - 20 mA (sink) |
| Resolution | 12 bit |
| Conversion Time | 1 ms |
| Loop Supply Voltage | DC 18 - 30 V |
| Load Impedance | 250Ω<br>Load Power Supply:<br>DC 18V: 600Ω maximum<br>DC 24V: 900Ω maximum<br>DC 30V: 1200Ω maximum |
| Full-Scale Calibration Error | ±1% maximum |
| Offset Calibration Error | ±0.1 mA maximum |
| Accuracy vs. Temperature Error | ±100 ppm / °C maximum |

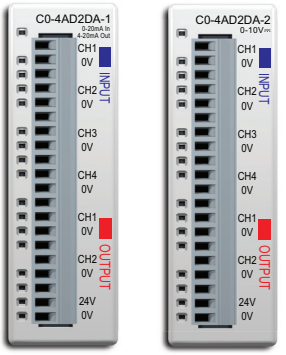
**Analog Current Output Circuit**



# Choosing Expansion I/O Modules

## Analog I/O Modules (continued)

### Analog Combo I/O Modules




**C0-4AD2DA-1** **C0-4AD2DA-2**

| Analog Combo I/O Modules | | | |
|---|---|---|---|
| **Part Number** | **Analog Input Type** | **Analog Output Type** | **External Power Required** |
| ***C0-4AD2DA-1*** | 4 channel, current (0-20 mA), 13 bit | 2 channel, current sourcing (4-20 mA), 12 bit | 24 VDC |
| ***C0-4AD2DA-2*** | 4 channel, voltage (0-10 V), 13 bit | 4 channel, voltage (0-10 V), 12 bit | 24 VDC |

## General Specifications For All CLICK PLC Products

These general specifications apply to all CLICK PLCs, optional I/O modules, and optional power supply products. Please refer to the appropriate I/O temperature derating charts under both the PLC and I/O module specifications to determine best operating conditions based on the ambient temperature of your particular application.

| General Specifications | |
|---|---|
| ***Power Input Voltage Range*** | 20-28 VDC |
| ***Maximum Power Consumption*** | 5 W (No 5 V use from communication port) |
| ***Maximum Inrush Current*** | 30 A (less than 1ms) |
| ***Acceptable External Power Drop*** | Max 10 ms |
| ***Operating Temperature*** | Analog, analog combo I/O modules only: 32°F to 140°F (0°C to 60°C); All other modules: 32°F to 131°F (0°C to 55°C), IEC 60068-2-14 (Test Nb, Thermal Shock) |
| ***Storage Temperature*** | –4°F to 158°F (–20°C to 70°C)<br>IEC 60068-2-1 (Test Ab, Cold)<br>IEC 60068-2-2 (Test Bb, Dry Heat)<br>IEC 60068-2-14 (Test Na, Thermal Shock) |
| ***Ambient Humidity*** | 30% to 95% relative humidity (non–condensing) |
| ***Environmental Air*** | No corrosive gases. Environmental pollution level is 2 (UL840) |
| ***Vibration*** | MIL STD 810C, Method 514.2, EC60068-2-6<br>JIS C60068-2-6 (Sine wave vibration test) |
| ***Shock*** | MIL STD 810C, Method 516.2, IEC60068-2-27, JIS C60068-2-27 |
| ***Noise Immunity*** | Comply with NEMA ICS3-304, Impulse noise 1µs, 1000V<br>EN61000-4-2 (ESD), EN61000-4-3 (RFI), EN61000-4-4 (FTB)<br>EN61000-4-5 (Surge), EN61000-4-6 (Conducted)<br>EN61000-4-8 (Power frequency magnetic field immunity)<br>RFI: No interference measured at 150 and 450 MHz (5w/15cm) |
| ***Emissions*** | EN55011:1998 Class A |
| ***Agency Approvals*** | UL508 (File No. E157382, E316037); CE (EN61131-2) |
| ***Other*** | RoHS |

# CLICK Specifications

## PLC Unit Specifications

| Basic, Standard and Analog PLC Unit Specifications | | | |
|---|---|---|---|
| | **Basic PLC** | **Standard PLC** | **Analog PLC** |
| ***Control Method*** | Stored Program/Cyclic execution method | Stored Program/Cyclic execution method | Stored Program/Cyclic execution method |
| ***I/O Numbering System*** | Fixed in Decimal | Fixed in Decimal | Fixed in Decimal |
| ***Ladder Memory (steps)*** | 8000 | 8000 | 8000 |
| ***Total Data Memory (words)*** | 8000 | 8000 | 8000 |
| ***Contact Execution (boolean)*** | < 0.6us | < 0.6us | < 0.6us |
| ***Typical Scan (1k boolean)*** | 1-2 ms | 1-2 ms | 1-2 ms |
| ***RLL Ladder Style Programming*** | Yes | Yes | Yes |
| ***Run Time Edits*** | No | No | No |
| ***Scan*** | Variable / fixed | Variable / fixed | Variable / fixed |
| ***CLICK Programming Software for Windows*** | Yes | Yes | Yes |
| ***Built-in Communication Ports*** | Yes (two RS-232 ports) | Yes (two RS-232 ports and one RS-485 port) | Yes (two RS-232 ports and one RS-485 port) |
| ***FLASH Memory*** | Standard on PLC | Standard on PLC | Standard on PLC |
| ***Built-in Discrete I/O points*** | 8 inputs, 6 outputs | 8 inputs, 6 outputs | 4 inputs, 4 outputs |
| ***Built-in Analog I/O Channels*** | No | No | 2 inputs, 2 outputs |
| ***Number of Instructions Available*** | 21 | 21 | 21 |
| ***Control Relays*** | 2000 | 2000 | 2000 |
| ***System Control Relays*** | 1000 | 1000 | 1000 |
| ***Timers*** | 500 | 500 | 500 |
| ***Counters*** | 250 | 250 | 250 |
| ***Interrupt*** | Yes (external: 8 / timed: 4) | Yes (external: 8 / timed: 4) | Yes (external: 4 / timed: 4) |
| ***Subroutines*** | Yes | Yes | Yes |
| ***For/Next Loops*** | Yes | Yes | Yes |
| ***Math (Integer and Hex)*** | Yes | Yes | Yes |
| ***Drum Sequencer Instruction*** | Yes | Yes | Yes |
| ***Internal Diagnostics*** | Yes | Yes | Yes |
| ***Password Security*** | Yes | Yes | Yes |
| ***System Error Log*** | Yes | Yes | Yes |
| ***User Error Log*** | No | No | No |
| ***Memory Backup*** | Super Capacitor | Super Capacitor + Battery | Super Capacitor + Battery |
| ***Battery Backup*** | No | Yes (battery sold separately; part # D2-BAT-1) | Yes (battery sold separately; part # D2-BAT-1) |
| ***Calendar/Clock*** | No | Yes | Yes |
| ***I/O Terminal Block Replacement*** | ADC p/n C0-16TB | ADC p/n C0-16TB | ADC p/n C0-16TB |
| ***Communication Port & Terminal Block Replacement*** | N/A | ADC p/n C0-3TB | ADC p/n C0-3TB |
| ***24 VDC Power Terminal Block Replacement*** | ADC p/n C0-4TB | ADC p/n C0-4TB | ADC p/n C0-4TB |

# CLICK Specifications

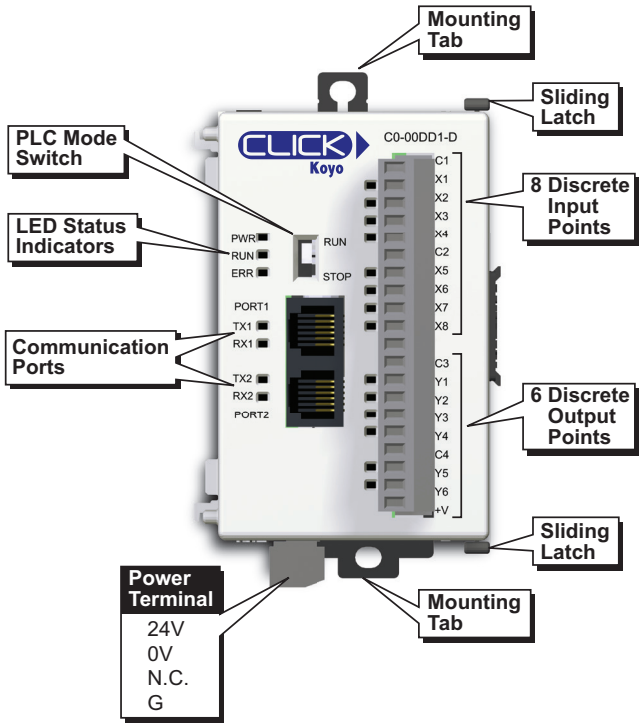
## PLC Units Specifications (continued)

| Ethernet Basic and Standard PLC Unit Specifications | | |
|---|---|---|
| | **Ethernet Basic PLC** | **Ethernet Standard PLC** |
| ***Control Method*** | Stored Program/Cyclic execution method | Stored Program/Cyclic execution method |
| ***I/O Numbering System*** | Fixed in Decimal | Fixed in Decimal |
| ***Ladder Memory (steps)*** | 8000 | 8000 |
| ***Total Data Memory (words)*** | 8000 | 8000 |
| ***Contact Execution (boolean)*** | < 0.2us | < 0.2us |
| ***Typical Scan (1k boolean)*** | < 1ms | < 1ms |
| ***RLL Ladder Style Programming*** | Yes | Yes |
| ***Run Time Edits*** | Yes | Yes |
| ***Scan*** | Variable / fixed | Variable / fixed |
| ***CLICK Programming Software for Windows*** | Yes | Yes |
| ***Built-in Communication Ports*** | Yes (one Ethernet port and one RS-232 port) | Yes (one Ethernet port, one RS-232 port and one RS-485 port) |
| ***FLASH Memory*** | Standard on PLC | Standard on PLC |
| ***Built-in Discrete I/O points*** | 8 inputs, 6 outputs | 8 inputs, 6 outputs |
| ***Built-in Analog I/O Channels*** | No | No |
| ***Number of Instructions Available*** | 21 | 21 |
| ***Control Relays*** | 2000 | 2000 |
| ***System Control Relays*** | 1000 | 1000 |
| ***Timers*** | 500 | 500 |
| ***Counters*** | 250 | 250 |
| ***Interrupt*** | Yes (external: 8 / timed: 4) | Yes (external: 8 / timed: 4) |
| ***Subroutines*** | Yes | Yes |
| ***For/Next Loops*** | Yes | Yes |
| ***Math (Integer and Hex)*** | Yes | Yes |
| ***Drum Sequencer Instruction*** | Yes | Yes |
| ***Internal Diagnostics*** | Yes | Yes |
| ***Password Security*** | Yes | Yes |
| ***System Error Log*** | Yes | Yes |
| ***User Error Log*** | No | No |
| ***Memory Backup*** | Super Capacitor + Battery | Super Capacitor + Battery |
| ***Battery Backup*** | Yes (battery part # D2-BAT-1) | Yes (battery part # D2-BAT-1) |
| ***Calendar/Clock*** | Yes | Yes |
| ***I/O Terminal Block Replacement*** | ADC p/n C0-16TB | ADC p/n C0-16TB |
| ***Communication Port & Terminal Block Replacement*** | N/A | ADC p/n C0-3TB |
| ***24 VDC Power Terminal Block Replacement*** | ADC p/n C0-4TB | ADC p/n C0-4TB |

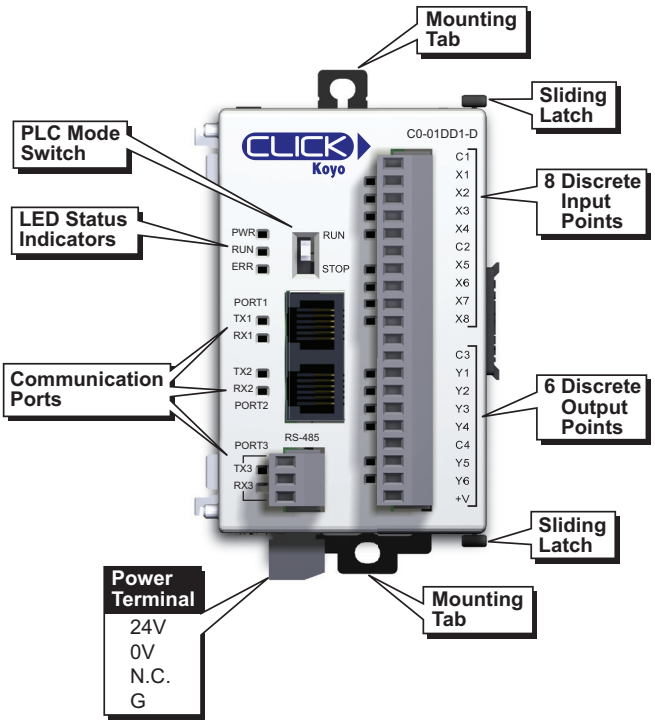
# CLICK Specifications

## PLC Features

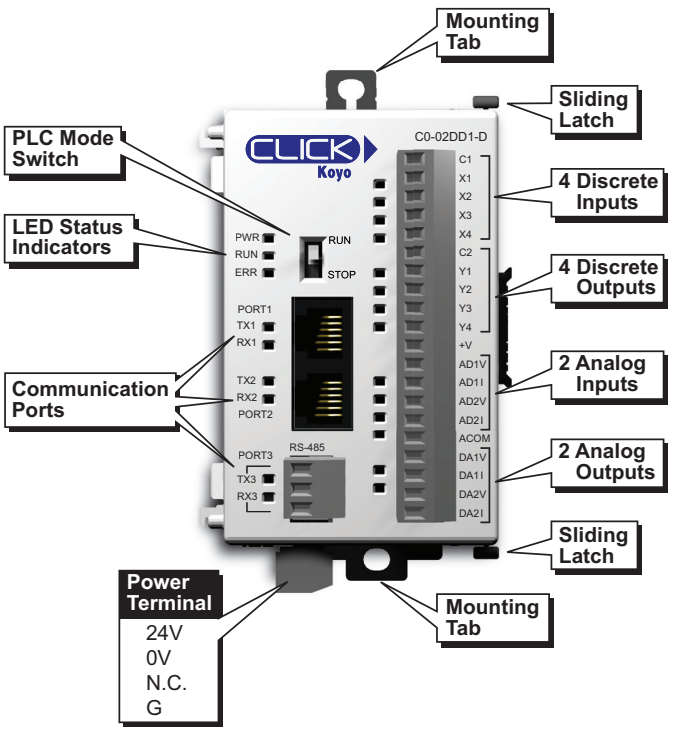
### Basic PLCs



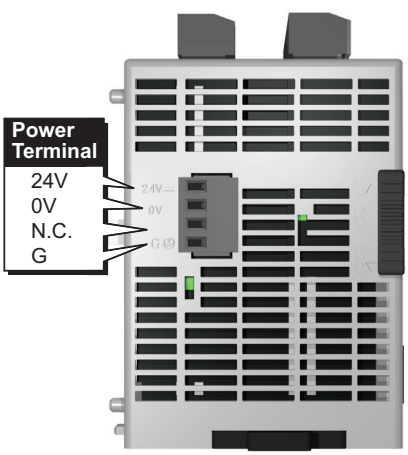

### Standard PLCs




### Analog PLCs




### Bottom of PLC (Same on all models)

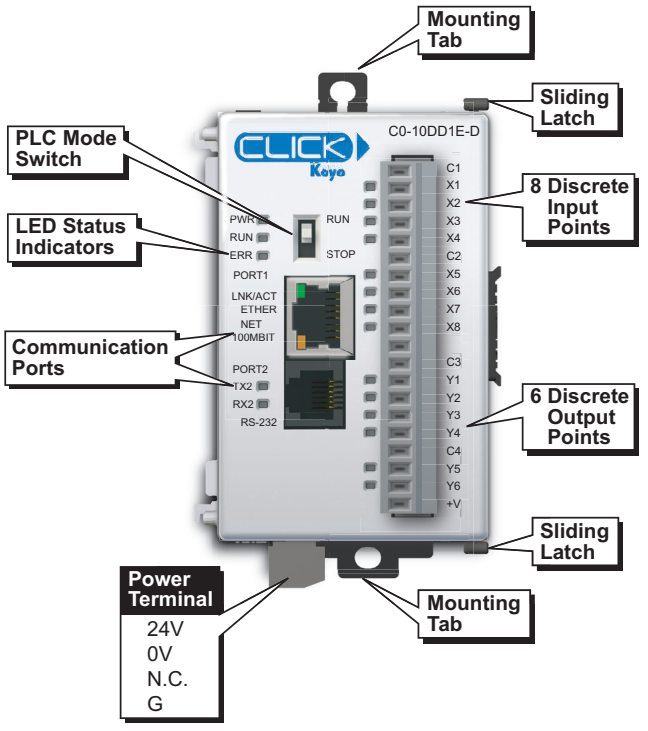



Company Information
Control Systems Overview
CLICK PLC
Do-More PLCs Overview
Do-More H2 PLC
Do-More T1H PLC
DirectLOGIC PLCs Overview
DirectLOGIC DL05/06
DirectLOGIC DL105
DirectLOGIC DL205
DirectLOGIC DL305
DirectLOGIC DL405
Productivity 2000
Productivity 3000
Universal Field I/O
Software
C-More HMI
C-More Micro HMI
ViewMarq Industrial Marquees
Other HMI
Communications
Appendix Book 1
Terms and Conditions

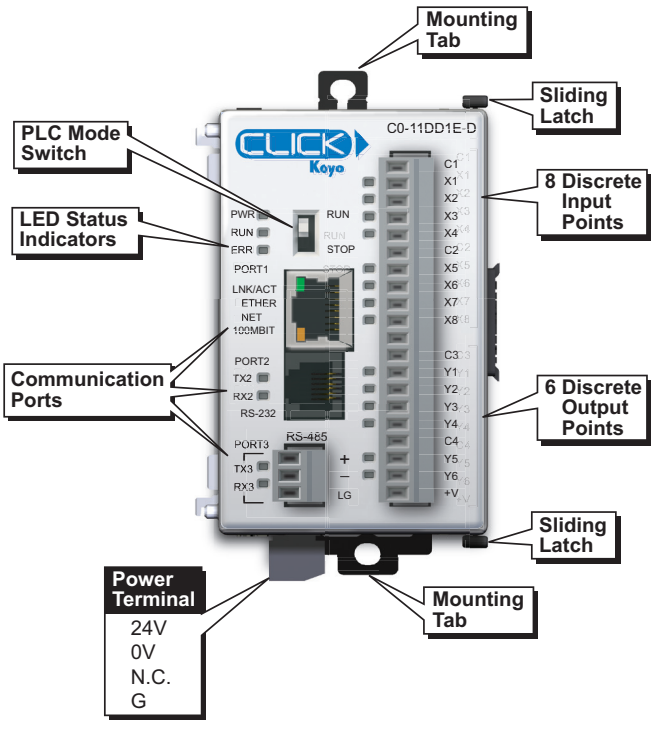
# CLICK Specifications

## PLC Features (continued)

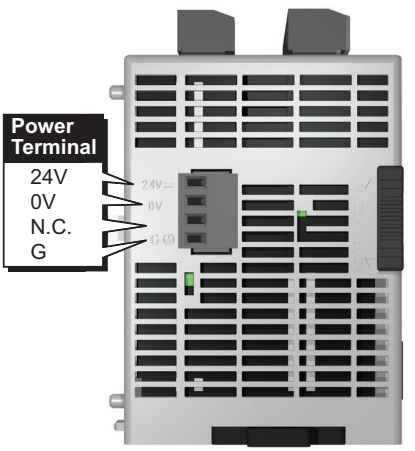
**Ethernet Basic PLCs**




**Ethernet Standard PLCs**



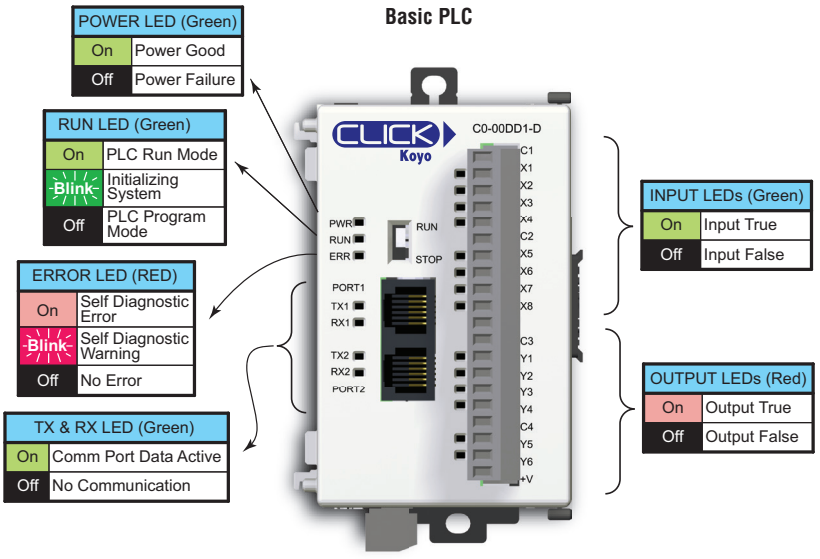

**Bottom of Ethernet PLC (Same on all models)**



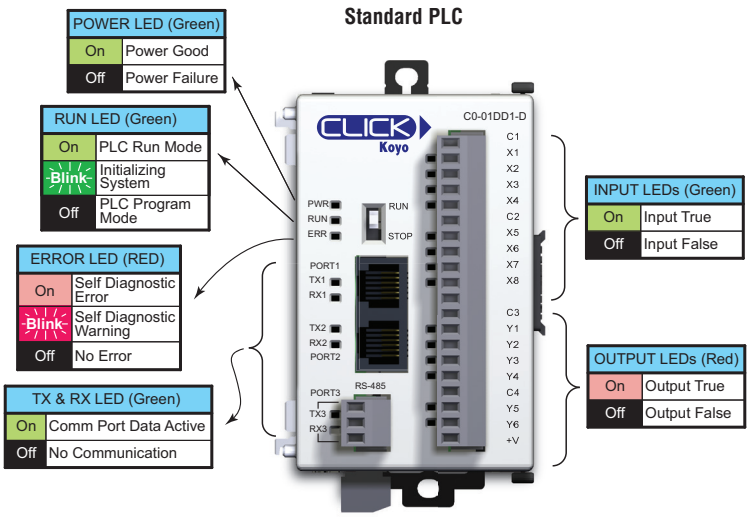
# CLICK Specifications

## PLC LED Status Indicators

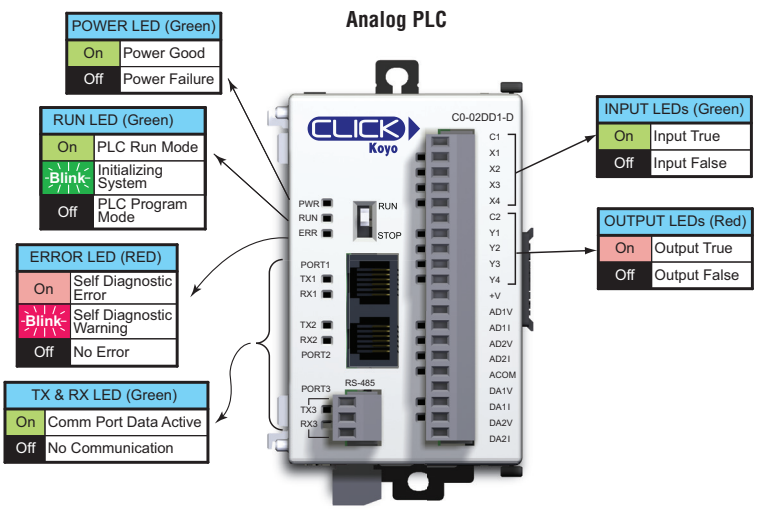
### Basic PLC




### Standard PLC

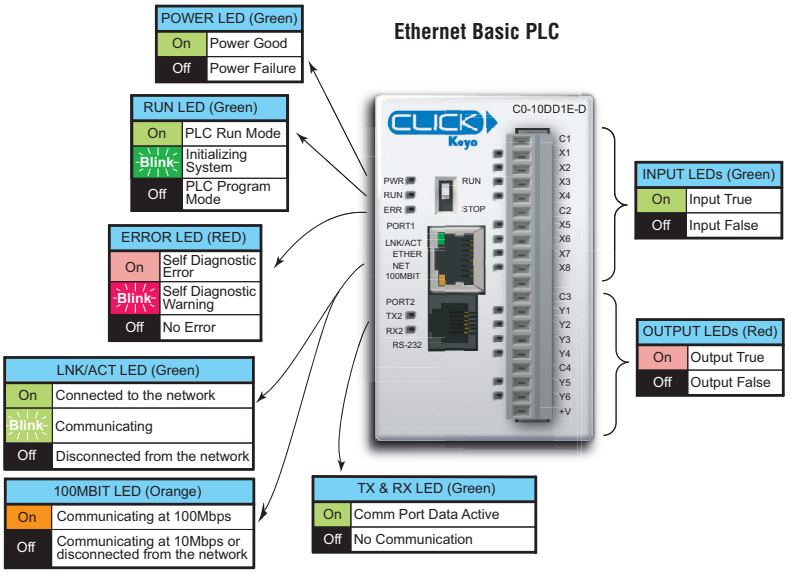


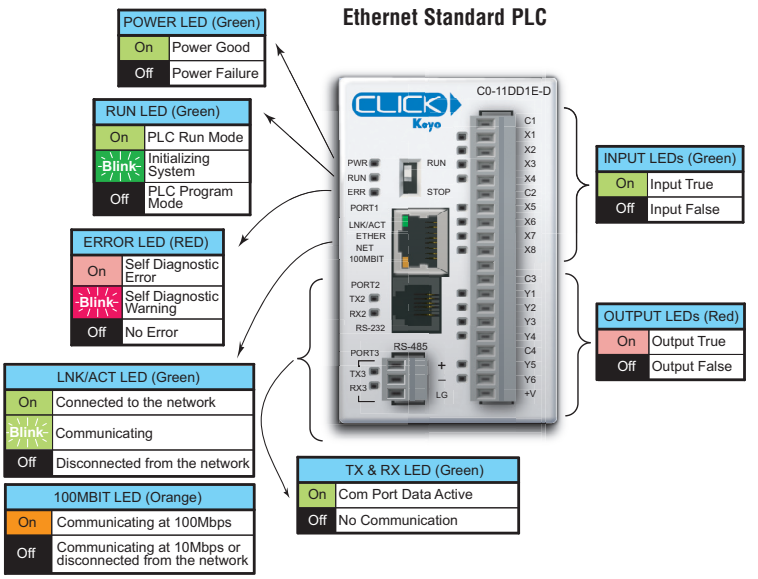

### Analog PLC



# CLICK Specifications

## PLC LED Status Indicators



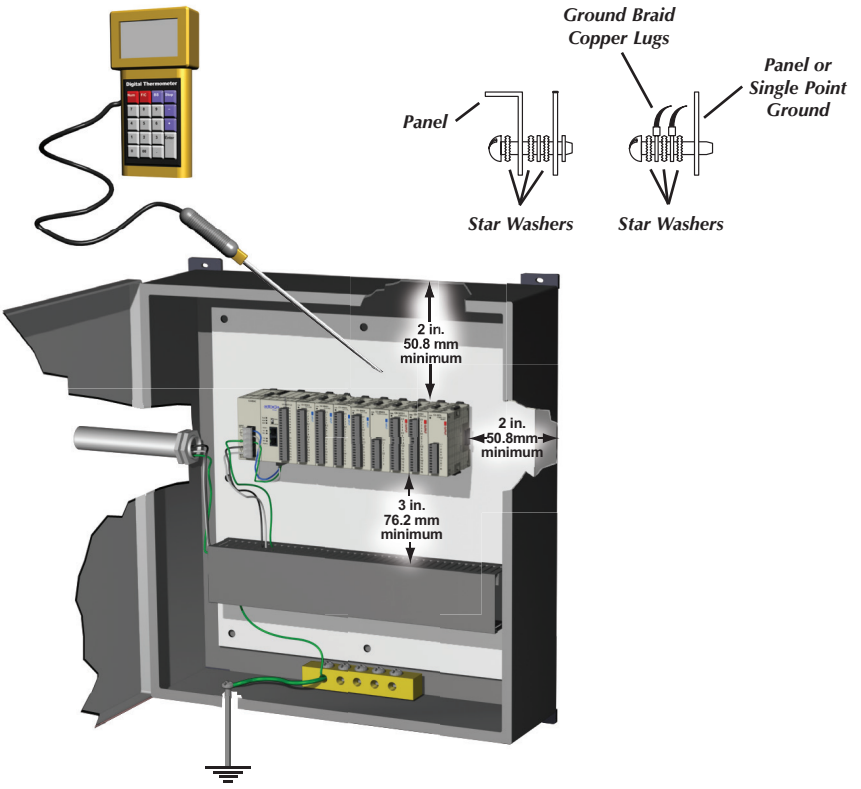
# Product Dimensions and Installation

It is important to understand the installation requirements for your CLICK system. Your knowledge of these requirements will help ensure that your system operates within its environmental and electrical limits.

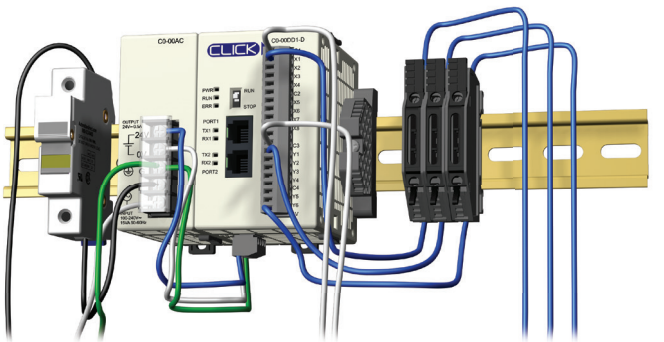
## Plan for Safety

**This catalog should never be used as a replacement for the user manual.**

You can purchase, download free, or view online the user manuals for these products. Manual C0-USER-M is the user manual for the CLICK PLC. The user manual contains important safety information that must be followed. The system installation should comply with all appropriate electrical codes and standards.

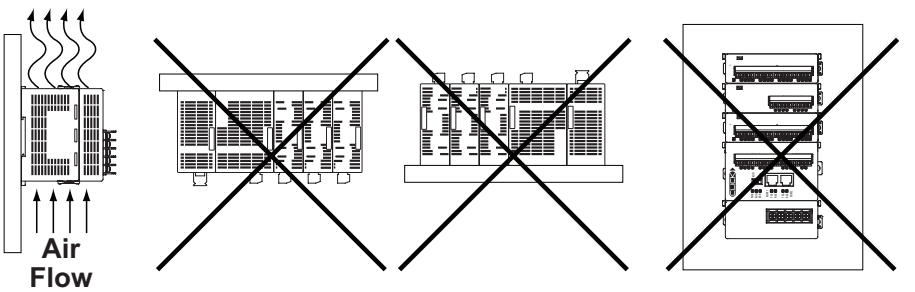



*NOTE: THERE IS A MIMIMUM CLEARANCE REQUIREMENT OF 2 INCHES(51 MM) BETWEEN THE CLICK PLC AND THE PANEL DOOR OR ANY DEVICES MOUNTED IN THE PANEL DOOR. THE SAME CLEARANCE IS REQUIRED BETWEEN THE PLC AND ANY SIDE OF THE ENCLOSURE. A MINIMUM CLEARANCE OF 3 INCHES (76 MM) IS REQUIRED BETWEEN THE PLC AND A WIREWAY OR ANY HEAT PRODUCING DEVICE.*



## Mounting Orientation

CLICK PLCs must be mounted properly to ensure ample airflow for cooling purposes. It is important to follow the unit orientation requirements and to verify that the PLC's dimensions are compatible with your application. Notice particularly the grounding requirements and the recommended cabinet clearances.

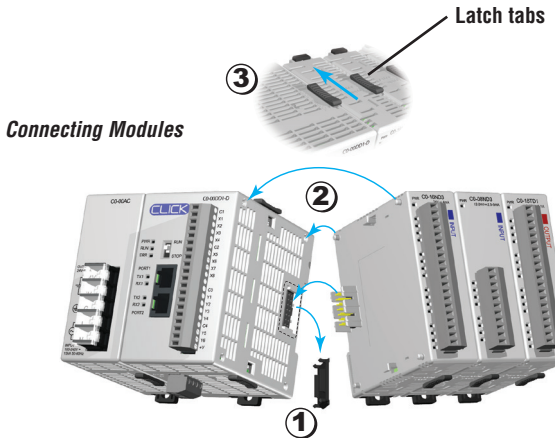


# Product Dimensions and Installation

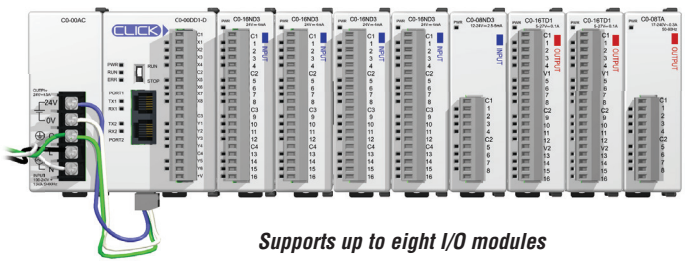
## Connecting the Modules Together

CLICK PLCs, I/O modules and power supplies connect together using the extension ports that are located on the side panels of the modules (no PLC back-plane/base required).

1. Remove extension port covers and slide the latch tabs forward.
2. Align the module pins and connection plug, and press the I/O module onto the right side of the PLC.
3. Slide the latch tabs backward to lock the modules together.




*Connecting Modules*



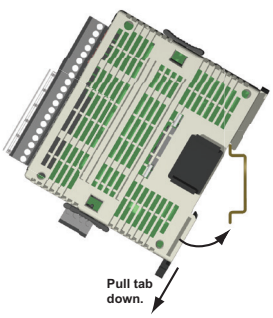
*Supports up to eight I/O modules*

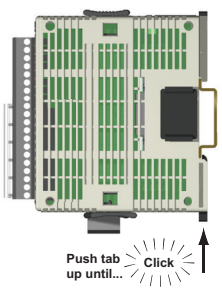
## Mounting

The CLICK PLC system, which includes the CLICK power supplies, PLC units, and I/O modules, can be mounted in one of two ways.

1. DIN rail mounted
2. Surface mounted using the built-in upper and lower mounting tabs.

*DIN Rail Mounting*




*Surface Mounting*

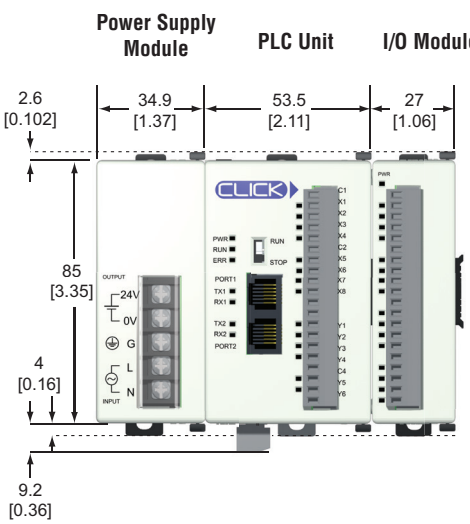
## Unit Dimensions

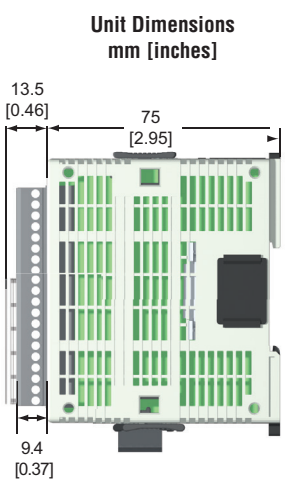
The dimensional drawings here and on the next page show the outside dimensions of the CLICK power suppy, PLC, and I/O modules. The CLICK PLC system is designed to be mounted on standard 35mm DIN rail, or it can be surface mounted.

Allow proper spacing from other components within an enclosure.

Maximum system:

Power Supply + PLC + 8 I/O modules.



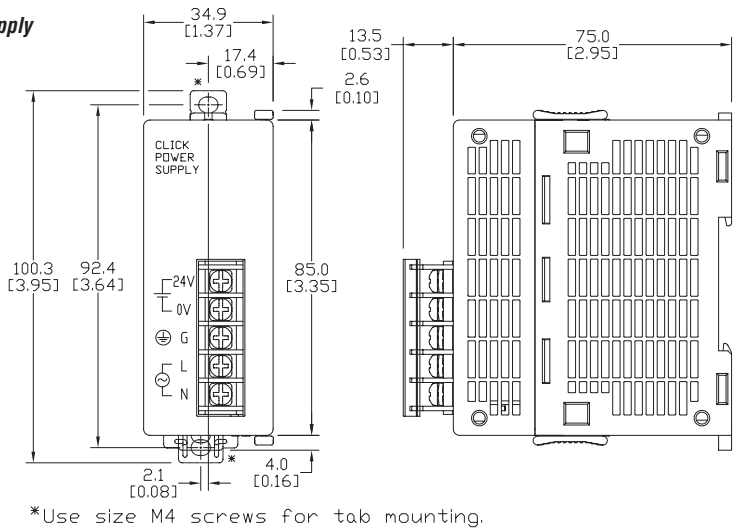



# Product Dimensions and Installation

## Unit Dimensions

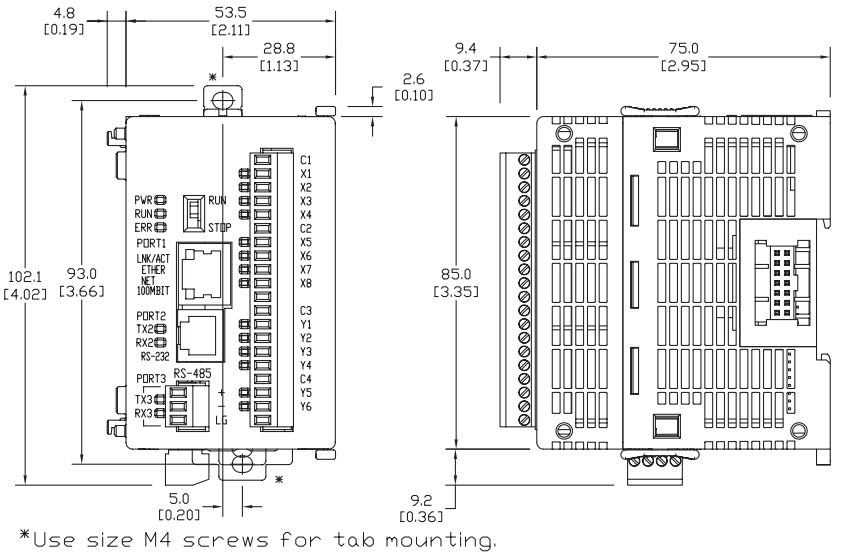
*mm [inches]*

***Power Supply***



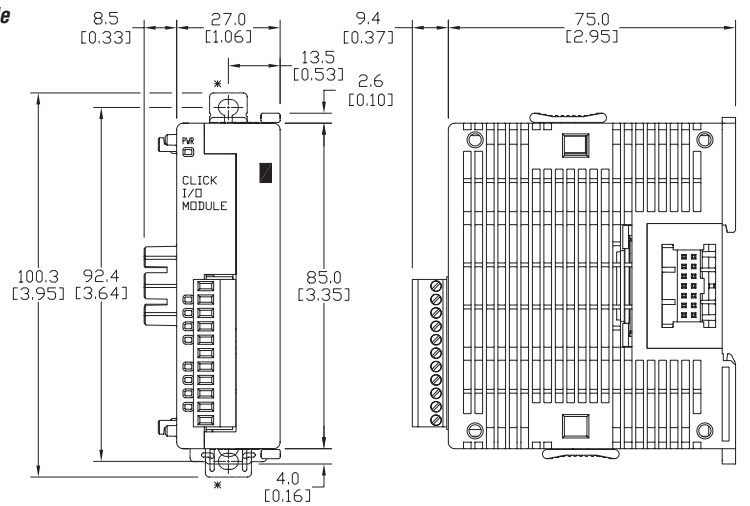

*Use size M4 screws for tab mounting.

***PLC Unit***




*Use size M4 screws for tab mounting.

***I/O Module***

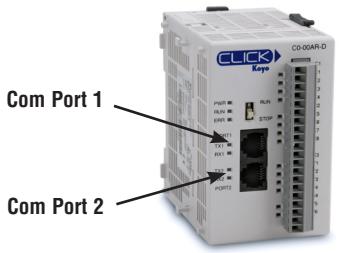



*Use size M4 screws for tab mounting.

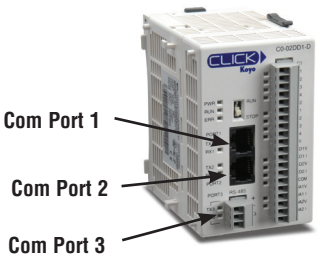
# Networking the CLICK PLC

## Built-in Communications Ports

Basic, Standard and Analog PLCs have two built-in RS-232 communications ports. Standard and Analog PLCs also have one built-in RS-485 communications port. One RS-232 port supports the Modbus RTU protocol only and can be used as the programming port. The other ports support either Modbus RTU or ASCII protocol. Both RS-232 ports supply 5V DC, so you can connect a monochrome C-more Micro HMI panel without an additional power supply.




Basic PLC




Standard and Analog PLCs

## LED Status Indicators

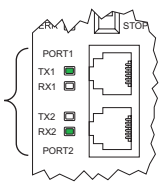
There are LED indicators located to the left of each communications port to indicate when the port is transmitting or receiving.

**Basic PLCs**

Port 1 & 2 LED Status Indicators

| TX1 and TX2 (Green) | |
|---|---|
| On | The Comm Port is sending data. |
| Off | The Comm Port is not sending data. |

| RX1 and RX2 (Green) | |
|---|---|
| On | The Comm Port is receiving data. |
| Off | The Comm Port is not receiving data. |

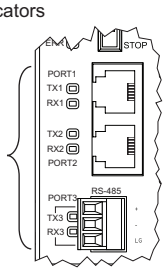



**Standard and Analog PLCs**

Port 1, 2, & 3 LED Status Indicators

| TX1, TX2 and TX3 (Green) | |
|---|---|
| On | The Comm Port is sending data. |
| Off | The Comm Port is not sending data. |

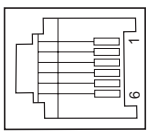
| RX1, RX2 and RX3 (Green) | |
|---|---|
| On | The Comm Port is receiving data. |
| Off | The Comm Port is not receiving data. |




| Com Port 1 Specifications |
|---|
| Use: Programming Port / Serial Communications (Slave only) |
| Physical: 6 pin, RJ12, RS-232 |
| Communication speed (baud): 38400 (fixed) |
| Parity: Odd |
| Station Address: 1 |
| Data length: 8 bits |
| Stop bit: 1 |
| Protocol: Modbus RTU (slave only) |

**Port 1**

6 pin RJ12 Phone Type Jack

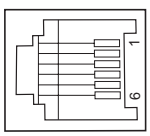



| Port 1 Pin Descriptions | | |
|---|---|---|
| 1 | 0V | Power (-) connection (GND) |
| 2 | 5V | Power (+) connection |
| 3 | RXD | Receive data (RS-232) |
| 4 | TXD | Transmit data (RS-232) |
| 5 | NC | No connection |
| 6 | 0V | Power (-) connection (GND) |

| Com Port 2 Specifications | Default |
|---|---|
| Use: Serial Communications | - |
| Physical: 6 pin, RJ12, RS-232 | - |
| Communication speed (baud): 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 | 38400 |
| Parity: odd, even, none | Odd |
| Station Address: 1 to 247 | 1 |
| Data length: 8 bits (Modbus RTU) or 7, 8 bits (ASCII) | 8 bits |
| Stop bit: 1,2 | 1 |
| Protocol: Modbus RTU (master/slave) or ASCII in/out | Modbus RTU |

**Port 2**

6 pin RJ12 Phone Type Jack

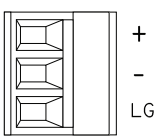



| Port 2 Pin Descriptions | | |
|---|---|---|
| 1 | 0V | Power (-) connection (GND) |
| 2 | 5V | Power (+) connection |
| 3 | RXD | Receive data (RS-232) |
| 4 | TXD | Transmit data (RS-232) |
| 5 | RTS | Request to send |
| 6 | 0V | Power (-) connection (GND) |

| Com Port 3 Specifications | Default |
|---|---|
| Use: Serial Communications | - |
| Physical: 3 pin, RS-485 | - |
| Communication speed (baud): 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 | 38400 |
| Parity: odd, even, none | Odd |
| Station Address: 1 to 247 | 1 |
| Data length: 8 bits (Modbus RTU) or 7, 8 bits ( ASCII) | 8 bits |
| Stop bit: 1,2 | 1 |
| Protocol: Modbus RTU (master/slave) or ASCII in/out | Modbus RTU |

**Port 3**

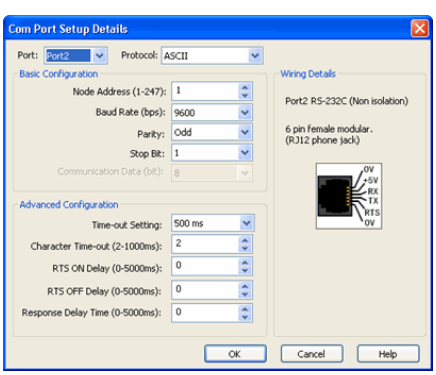
RS-485




| Port 3 Pin Descriptions | | |
|---|---|---|
| 1 | + (plus) | Signal A (RS-485) |
| 2 | - (minus) | Signal B (RS-485) |
| 3 | LG | Logic Ground(0 V) |

## Port Setup

Use CLICK programming software to easily configure the communications ports.

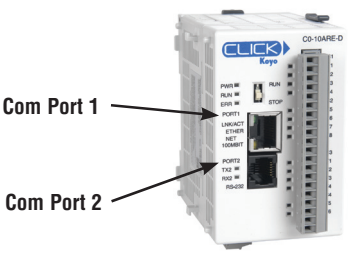


# Networking the CLICK PLC

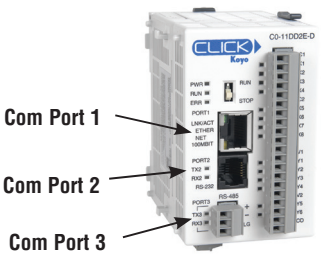
Prices as of October 15, 2015. Check Web site for most current prices.

## Built-in Communications Ports

Ethernet Basic and Standard PLCs have one built-in Ethernet communications port and one RS-232 communications port. Ethernet Standard PLCs also have one built-in RS-485 communications port. The Ethernet port supports the Modbus TCP protocol. The RS-232 and RS-485 ports support either Modbus RTU or ASCII protocol. The RS-232 port supplies 5 VDC, so you can connect a monochrome C-more Micro HMI panel without an additional power supply.




Ethernet Basic PLC




Ethernet Standard PLCs

## LED Status Indicators

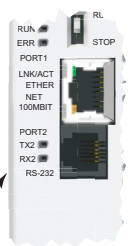
There are LED indicators located to the left of each communication port to indicate when the port is transmitting or receiving.

### Ethernet Basic PLCs

Port 1 & 2 LED Status Indicators

| LNK/ACT LED (Green) | |
|---|---|
| On | Connected to the network |
| Blink | Communicating |
| Off | Disconnected from the network |

| 100MBIT LED (Orange) | |
|---|---|
| On | Communicating at 100Mbps |
| Off | Communicating at 10Mbps or disconnected from the network |




| TX2 (Green) | |
|---|---|
| On | The Comm Port is sending data. |
| Off | The Comm Port is not sending data. |

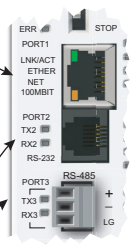
| RX2 (Green) | |
|---|---|
| On | The Comm Port is receiving data. |
| Off | The Comm Port is not receiving data. |

### Ethernet Standard PLCs

Port 1, 2 & 3 LED Status Indicators

| LNK/ACT LED (Green) | |
|---|---|
| On | Connected to the network |
| Blink | Communicating |
| Off | Disconnected from the network |

| 100MBIT LED (Orange) | |
|---|---|
| On | Communicating at 100Mbps |
| Off | Communicating at 10Mbps or disconnected from the network |



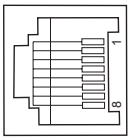

| TX2 and TX3 (Green) | |
|---|---|
| On | The Comm Port is sending data. |
| Off | The Comm Port is not sending data. |

| RX2 and RX3 (Green) | |
|---|---|
| On | The Comm Port is receiving data. |
| Off | The Comm Port is not receiving data. |

| Com Port 1 Specifications |
|---|
| Use: Programming and Ethernet Communication |
| Physical: 8 pin, RJ45, Ethernet |
| Communication speed (Mbps): 10/100 |
| Protocol: Modbus TCP |

**Port 1**

8 pin RJ45

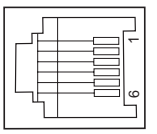



| Port 1 Pin Descriptions | | |
|---|---|---|
| 1 | TX+ | Transmit Data (+) |
| 2 | TX- | Transmit Data (-) |
| 3 | RX+ | Receive data (+) |
| 4 | NC | Not connected |
| 5 | NC | Not connected |
| 6 | RX- | Receive Data (-) |
| 7 | NC | No connection |
| 8 | NC | No connection |

| Com Port 2 Specifications | Default |
|---|---|
| Use: Serial Communication | - |
| Physical: 6 pin, RJ12, RS-232 | - |
| Communication speed (baud): 2400, 4800, 9600, 19200, 38400, 57600, 115200 | 38400 |
| Parity: odd, even, none | Odd |
| Station Address: 1 to 247 | 1 |
| Data length: 8 bits (Modbus RTU) or 7, 8 bits (ASCII) | 8 bits |
| Stop bit: 1,2 | 1 |
| Protocol: Modbus RTU (master/slave) or ASCII in/out | Modbus RTU |

**Port 2**

6 pin RJ12 Phone Type Jack

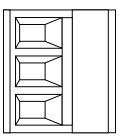



| Port 2 Pin Descriptions | | |
|---|---|---|
| 1 | 0V | Power (-) connection (GND) |
| 2 | 5V | Power (+) connection |
| 3 | RXD | Receive data (RS-232) |
| 4 | TXD | Transmit data (RS-232) |
| 5 | RTS | Request to send |
| 6 | 0V | Power (-) connection (GND) |

| Com Port 3 Specifications | Default |
|---|---|
| Use: Serial Communication | - |
| Physical: 3 pin, RS-485 | - |
| Communication speed (baud): 2400, 4800, 9600, 19200, 38400, 57600, 115200 | 38400 |
| Parity: odd, even, none | Odd |
| Station Address: 1 to 247 | 1 |
| Data length: 8 bits (Modbus RTU) or 7, 8 bits ( ASCII) | 8 bits |
| Stop bit: 1,2 | 1 |
| Protocol: Modbus RTU (master/slave) or ASCII in/out | Modbus RTU |

**Port 3**

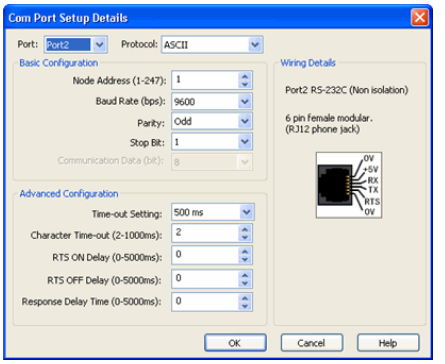
RS-485




| Port 3 Pin Descriptions | | |
|---|---|---|
| 1 | + (plus) | Signal A (RS-485) |
| 2 | - (minus) | Signal B (RS-485) |
| 3 | LG | Logic Ground(0 V) |

## Port Setup

Use CLICK programming software to easily configure the communication ports.



# Networking the CLICK PLC

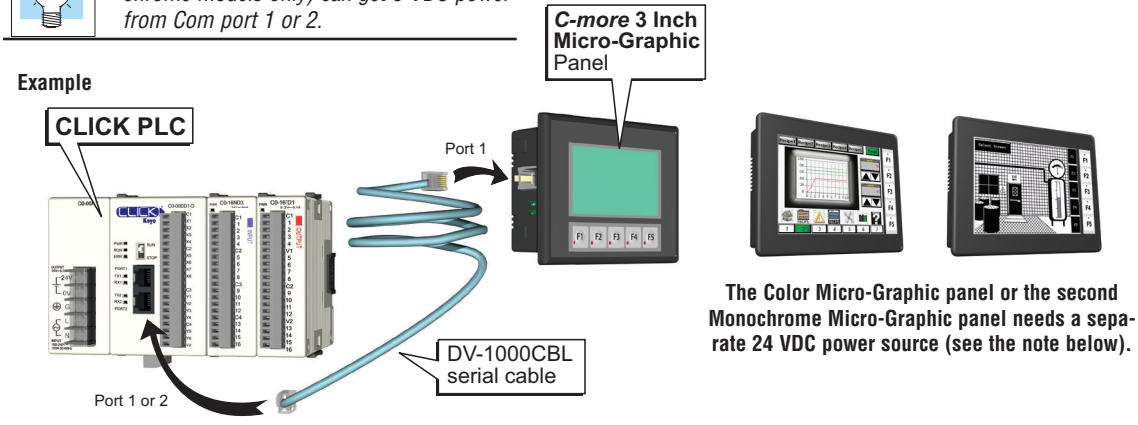
## Typical Communication Applications

The diagrams on these three pages illustrate the typical uses for the CLICK PLC's communication ports.

### Port 1 (RS-232) – Modbus RTU Slave Mode Only

*C-more Micro-Graphic panels (monochrome models only) can get 5 VDC power from Com port 1 or 2.*

**Example**


C-more 3 Inch Micro-Graphic Panel
CLICK PLC
Port 1
DV-1000CBL serial cable
Port 1 or 2
The Color Micro-Graphic panel or the second Monochrome Micro-Graphic panel needs a separate 24 VDC power source (see the note below).

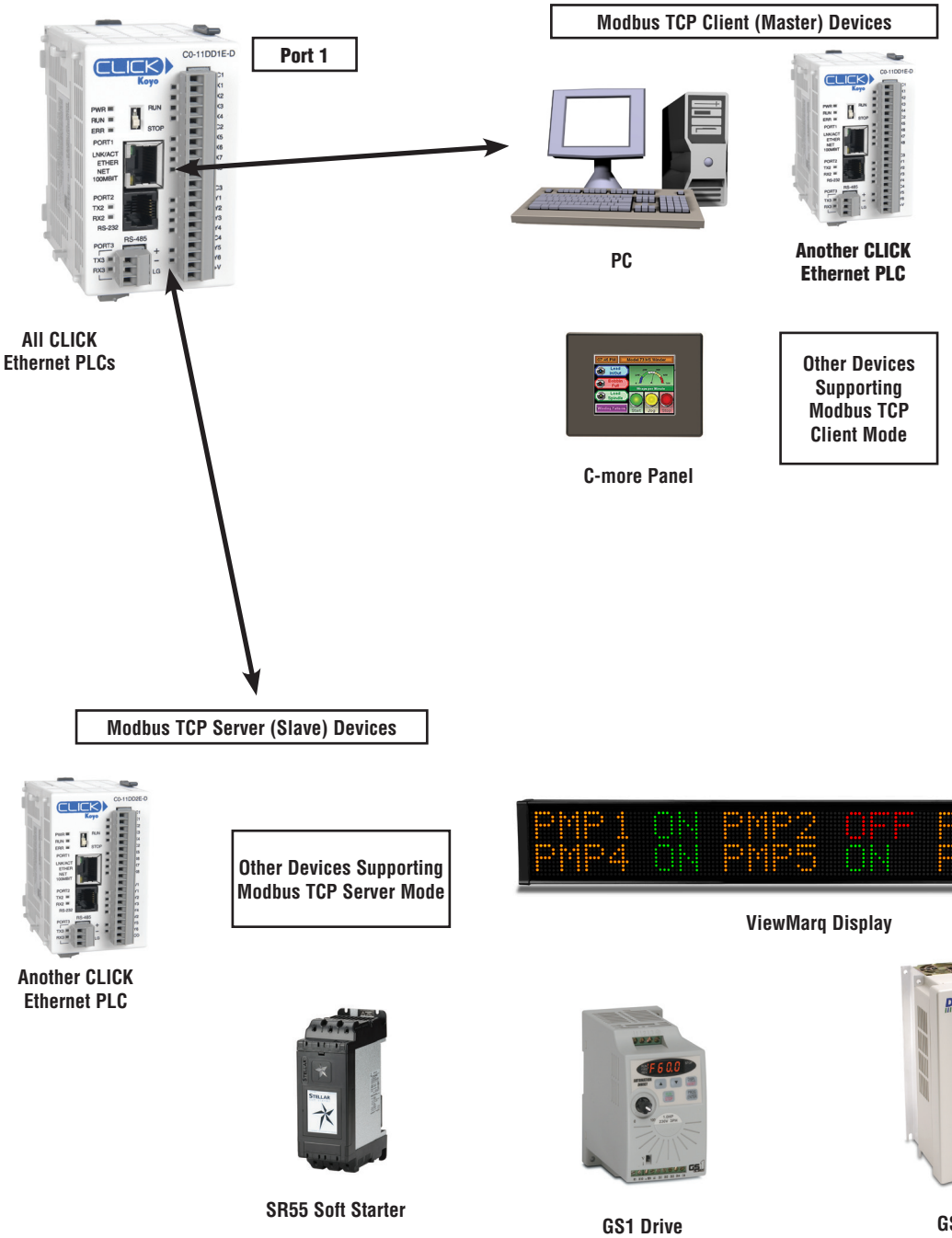
***NOTE:*** *CLICK's (RS-232) Port 1 and Port 2 can provide 5 VDC power to the panel, but not at the same time. If a C-more Micro-Graphic panel is connected to both ports, then at least one of the panels must be powered by a C-more Micro DC power adapter, EA-MG-P1 or EA-MG-SP1, or another 24 VDC power source. Color C-more Micro-Graphic panels must also be powered from a separate 24 VDC source.*

### Do not use the following *Direct*LOGIC devices with CLICK's Port 1 or 2:

**WARNING: The following *Direct*LOGIC PLC devices cannot be used with a CLICK PLC's Port 1 or Port 2:**
**Handheld Programmer for DL05, DL06, DL105, DL205 & D3-350 CPUs, p/n D2-HPP**
**Handheld Programmer for DL405 CPUs, p/n D4-HPP-1**
**Timer/Counter Access for DL05, DL06, DL105, DL205, DL405 & D3-350 CPUs, p/n DV-1000**

# Networking the CLICK PLC

## Port 1 (Ethernet) – Modbus TCP



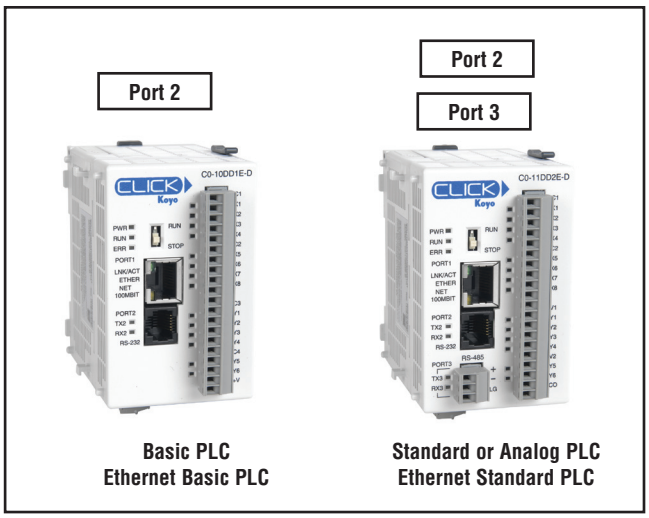
# Networking the CLICK PLC

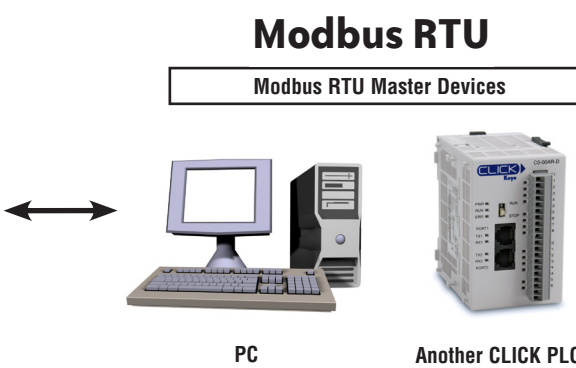
## Port 2 (RS-232) – Modbus RTU or ASCII

## Port 3 (RS-485; Standard, Ethernet Standard and Analog PLCs Only) – Modbus RTU or ASCII

All PLCs have RS-232 port 2, but only Standard, Analog and Ethernet Standard PLCs have RS-485 port 3.

Ports 2 and 3 allow networking to similar devices.

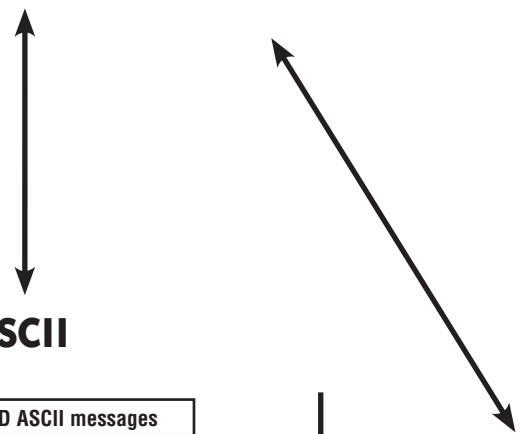


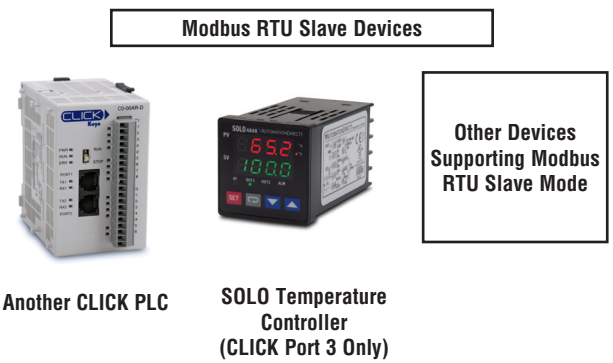



See Note on previous page about connecting a C-more Micro-Graphic panel to Port 1 or 2.

*C-more* and *C-more* Micro-Graphic Panel

Other Devices Supporting Modbus RTU Master Mode





Modbus RTU Slave Devices
Another CLICK PLC
SOLO Temperature Controller (CLICK Port 3 Only)
Other Devices Supporting Modbus RTU Slave Mode

# Power Supplies

## Power Supplies

The CLICK PLC family offers two 24 VDC power supplies. They are identical except for the output current.

It is not mandatory to use one of these CLICK power supplies for the CLICK PLC system. You can use any other 24 VDC power supply that Automationdirect.com offers, including the PSP24-DC12-1 12 VDC to 24 VDC converter shown below.

### C0-00AC Power Supply

Limited auxiliary AC power supply allows you to power the 24 VDC CLICK C0 series PLCs with 100-240 VAC supply power. The 0.5A DC power supply is capable of controlling the PLC plus a limited configuration based on the power budget of each I/O module. The C0-00AC is a low-cost solution for applications requiring only minimal I/O and power consumption. This power supply will not support a fully-populated CLICK PLC system with all possible I/O module combinations.

### C0-01AC Power Supply

Expanded auxiliary AC power supply allows you to power the 24 VDC CLICK C0 series PLCs with 100-240 VAC supply power. The 1.3A DC power supply is capable of supporting a fully-populated CLICK PLC system with all possible I/O module combinations, with no concerns for exceeding the power budget.

### PSP24-DC12-1 DC-DC Converter

With this DC-DC converter you can operate the CLICK PLC with 12 VDC input power.

| CLICK 24 VDC Power Supply Ratings | | |
|---|---|---|
| **Part Number** | **Output Current** | **Price** |
| C0-00AC | 0.5 A | $29.00 |
| C0-01AC | 1.3 A | $39.00 |

| C0-00AC Power Supply Specifications | |
|---|---|
| *Input Voltage Range* | 85-264 VAC |
| *Input Frequency* | 47-63 Hz |
| *Input Current (typical)* | 0.3 A @ 100 VAC, 0.2 A @ 200 VAC |
| *Inrush Current* | 30 A |
| *Output Voltage Range* | 23-25 VDC |
| *Output Current* | 0.5 A |
| *Over Current Protection* | @ 0.65 A (automatic recovery) |
| *Weight* | 5.3 oz (150g) |

| C0-01AC Power Supply Specifications | |
|---|---|
| *Input Voltage Range* | 85-264 VAC |
| *Input Frequency* | 47-63 Hz |
| *Input Current (typical)* | 0.9 A @ 100 VAC, 0.6 A @ 200 VAC |
| *Inrush Current* | 30 A |
| *Output Voltage Range* | 23-25 VDC |
| *Output Current* | 1.3 A |
| *Over Current Protection* | @ 1.6 A (automatic recovery) |
| *Weight* | 6.0 oz (170g) |

| PSP24-DC12-1 DC-DC Converter Specifications | |
|---|---|
| *Input Voltage Range* | 9.5-18 VDC |
| *Input Power (no load)* | 1.0 W max. |
| *Startup Voltage* | 8.4 VDC |
| *Undervoltage Shutdown* | 7.6 VDC |
| *Output Voltage Range* | 24-28 VDC (adjustable) |
| *Output Current* | 1.0 A |
| *Short Circuit Protection* | Current limited at 110% typical |
| *Weight* | 7.5 oz (213g) |

**C0-00AC**

**24 VDC Output Power Terminals (for CLICK PLC, I/O or field device, etc.)**

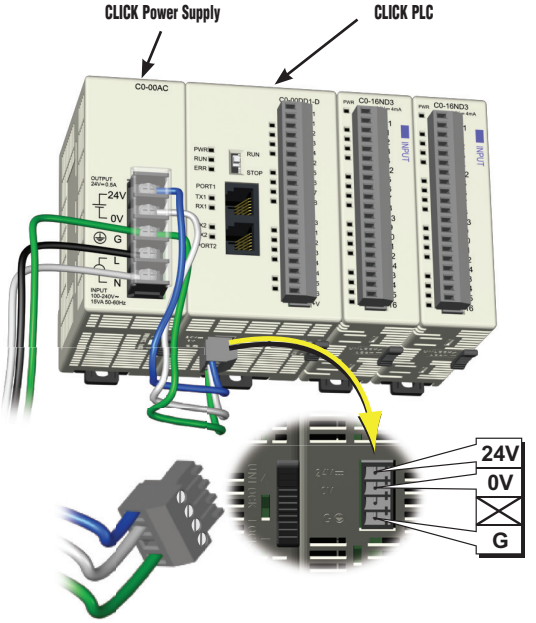
**85-264 VAC Power Source Input Terminals**

**C0-01AC**

**24 VDC Output Power Terminals (for CLICK PLC, I/O or field device, etc.)**

**85-264 VAC Power Source Input Terminals**

**PSP24-DC12-1**




**24 VDC power is supplied to the PLC unit through wiring connected from the power supply output to the 4-pin 24 VDC input connector located on the bottom of the PLC unit.**

# Power Budgeting

## Power Budgeting

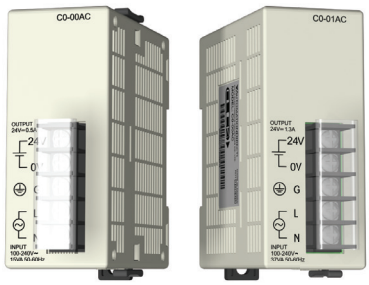
There are two areas to be considered when determining the power required to operate a CLICK PLC system. The first area is the power required by the CLICK PLC, along with the internal logic side power that the CPU provides to its own I/O and any connected I/O modules that are powered through the PLC expansion port; plus any device, such as a C-more Micro-Graphic panel, that is powered through one of the communications ports.

The second area is the power required by all externally connected I/O devices. This should be viewed as the field side power required. The field side power is dependent on the voltage used for a particular input or output device as it relates to the wired I/O point, and the calculated load rating of the connected device.

It is strongly recommended that the power source for the logic side be separate from the power source for the field side to help eliminate possible electrical noise.

Power budgeting requires the calculation of the total current the 24 VDC power source needs to provide to CLICK's logic side, and also a separate calculation of the total current required for all devices operating from the field side of the PLC system.

Refer to the Power Budgeting example shown on the following page. The table shows required current for a CLICK PLC, two I/O modules, and a C-more Micro. Use the total amperage values to select the properly sized power supply.




**CLICK 24 VDC Power Supply**
**C0-00AC or C0-01AC**

**Other 24 VDC Power Supply**
**Example: PSP24-60S**

| PLC Current Consumption (mA) | | |
|---|---|---|
| **Part Number** | **Power Budget 24 VDC (logic side)** | **External 24 VDC (field side)** |
| **Basic PLC Units** | | |
| *C0-00DD1-D* | 120 | 60 |
| *C0-00DD2-D* | 120 | 0 |
| *C0-00DR-D* | | |
| *C0-00AR-D* | | |
| **Standard PLC Units** | | |
| *C0-01DD1-D* | 140 | 60 |
| *C0-01DD2-D* | 140 | 0 |
| *C0-01DR-D* | | |
| *C0-01AR-D* | | |
| **Analog PLC Units** | | |
| *C0-02DD1-D* | 140 | 60 |
| *C0-02DD2-D* | 140 | 0 |
| *C0-02DR-D* | | |
| **Ethernet Basic PLC Units** | | |
| *C0-10DD1E-D* | 120 | 60 |
| *C0-10DD2E-D* | 120 | 0 |
| *C0-10DRE-D* | | |
| *C0-10ARE-D* | | |
| **Ethernet Standard PLC Units** | | |
| *C0-11DD1E-D* | 140 | 60 |
| *C0-11DD2E-D* | 140 | 0 |
| *C0-11DRE-D* | | |
| *C0-11ARE-D* | | |

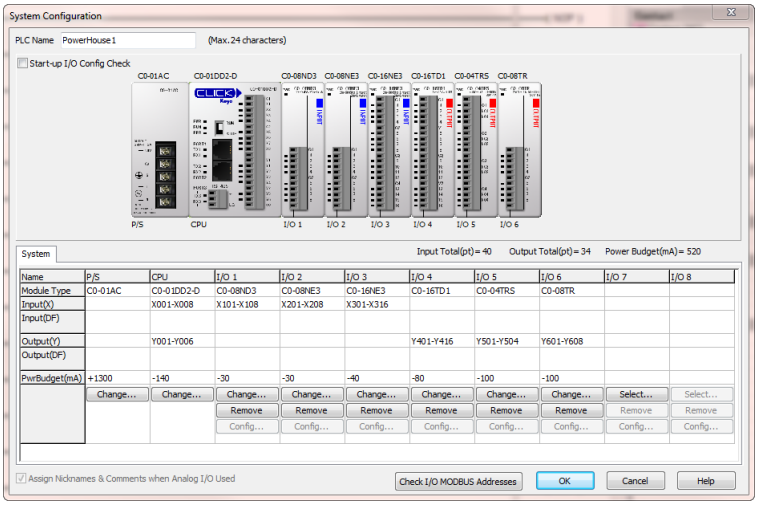
| I/O Module Current Consumption (mA) | | |
|---|---|---|
| **Part Number** | **Power Budget 24 VDC (logic side)** | **External 24 VDC (field side)** |
| **Discrete Input Modules** | | |
| *C0-08ND3* | 30 | 0 |
| *C0-08ND3-1* | 30 | 0 |
| *C0-16ND3* | 40 | 0 |
| *C0-08NE3* | 30 | 0 |
| *C0-16NE3* | 40 | 0 |
| *C0-08NA* | 30 | 0 |
| **Discrete Output Modules** | | |
| *C0-08TD1* | 50 | 15 |
| *C0-08TD2* | 50 | 0 |
| *C0-16TD1* | 80 | 100 |
| *C0-16TD2* | 80 | 0 |
| *C0-08TA* | 80 | 0 |
| *C0-04TRS* | 100 | 0 |
| *C0-08TR* | 100 | 0 |

| I/O Module Current Consumption (continued) (mA) | | |
|---|---|---|
| **Part Number** | **Power Budget 24 VDC (logic side)** | **External 24 VDC (field side)** |
| **Discrete Combo I/O Modules** | | |
| *C0-16CDD1* | 80 | 50 |
| *C0-16CDD2* | 80 | 0 |
| *C0-08CDR* | 80 | 0 |
| **Analog Input Modules** | | |
| *C0-04AD-1* | 20 | 65 |
| *C0-04AD-2* | 23 | 65 |
| *C0-04RTD* | 25 | 0 |
| *C0-04THM* | 25 | 0 |
| **Analog Output Modules** | | |
| *C0-04DA-1* | 20 | 145 |
| *C0-04DA-2* | 20 | 85 |
| **Analog Combo I/O Modules** | | |
| *C0-4AD2DA-1* | 25 | 75 |
| *C0-4AD2DA-2* | 20 | 65 |
| **C-more Micro-Graphic Panel** | | |
| **Monochrome only** | 90 | 0 |

# Power Budgeting

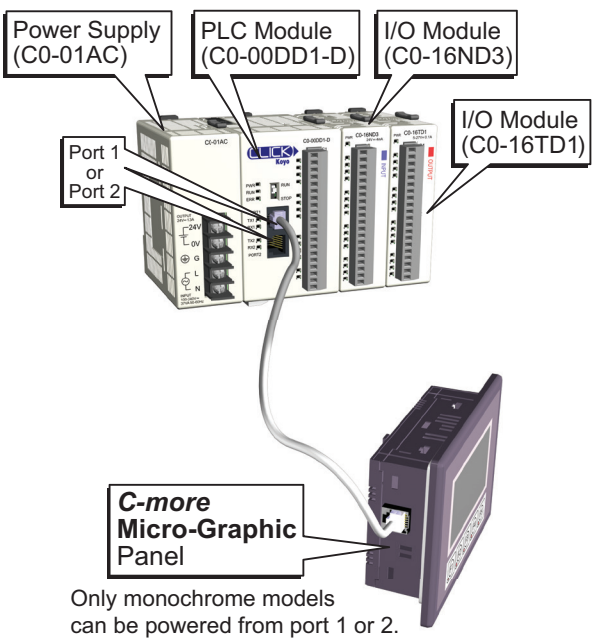
## Power Budgeting Using the CLICK Programming Software

The CLICK Programming software can also be used for power budgeting. Based on the amperage rating of the power supply selected in the first column, your power budget is calculated by subtracting each consecutive module's power consumption from the total available power budget. If you exceed the maximum allowable power consumption the power budget row is highlighted in red.




### Power Budgeting Example

| Current Consumption (mA) Example | | |
|---|---|---|
| **Part Number** | **Power Budget 24 VDC (logic side)** | **External 24 VDC (field side)** |
| ***C0-00DD1-D*** | 120 | 60 |
| ***C0-16ND3*** | 40 | 0 |
| ***C0-16TD1*** | 80 | 100 |
| ***C-more Micro*** | 90 | 0 |
| ***Total:*** | 330 | 160* |
| * Add in calculated load of connected I/O devices. | | |


Power Supply (C0-01AC)
PLC Module (C0-00DD1-D)
I/O Module (C0-16ND3)
I/O Module (C0-16TD1)
Port 1 or Port 2
C-more Micro-Graphic Panel
Only monochrome models can be powered from port 1 or 2.

# Wiring System for CLICK PLCs

## Wiring Solutions using the *ZIP*Link Wiring System

*ZIP*Links eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end or terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks.

*ZIP*Links are available in a variety of styles to suit your needs, including feedthrough connector module. *ZIP*Links are available for all Basic, Standard and Ethernet CLICK PLC units and most discrete and analog I/O modules. Pre-printed I/O-specific adhesive label strips for quick marking of *ZIP*Link modules are provided with *ZIP*Link cables.

### Solution 1: CLICK PLC and I/O Modules to *ZIP*Link Connector Modules

When looking for quick and easy I/O-to-field termination, a *ZIP*Link connector module used in conjunction with a prewired *ZIP*Link cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.

Use the "CLICK PLC PLC Unit *ZIP*Link Selector" table and CLICK I/O *ZIP*Link selector tables located in this section:

1. Locate your PLC or I/O module.
2. Select a *ZIP*Link Module.
3. Select a corresponding *ZIP*Link Cable.

### Solution 2: CLICK PLC and I/O Modules to 3rd Party Devices

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the *ZIP*Link Pigtail Cables. *ZIP*Link Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.

Use the I/O Modules to 3rd Party Devices selector tables located in the *ZIP*Link section:

1. Locate your PLC or I/O module.
2. Select a *ZIP*Link Pigtail Cable that is compatible with your 3rd party device.

### Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

*ZIP*Link cables are available in a wide range of configurations for connecting to PLCs and SureServo, SureStep, Stellar Soft Starter and AC drives. Add a *ZIP*Link communications module to quickly and easily set up a multi-device network.

Use the Drives Communication selector tables located in the *ZIP*Link section:

1. Locate your Drive and type of communications.
2. Select a *ZIP*Link cable and other associated hardware.

### Solution 4: Serial Communications Cables

*ZIP*Link offers communications cables for use with CLICK PLCs that can also be used with other communications devices. Connections include a 6-pin RJ12 connector which can be used in conjunction with the RJ12 Feedthrough module.

Use the Serial Communications Cables selector table located in the *ZIP*Link section:

1. Locate your connector type
2. Select a cable.

# ZIPLink Wiring System for CLICK PLCs

| CLICK PLC *ZIP*Link Selector | | | | |
|---|---|---|---|---|
| **PLC** | | ***ZIP*Link** | | |
| ***PLC Unit*** | ***# of Terms*** | ***Component*** | ***Module Part No.*** | ***Cable Part No.*** |
| C0-00DD1-D | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20 * |
| C0-00DD2-D | | | | |
| C0-00DR-D | | | | |
| C0-00AR-D | | | | |
| C0-01DD1-D | | | | |
| C0-01DD2-D | | | | |
| C0-01DR-D | | | | |
| C0-01AR-D | | | | |
| C0-10DD1E-D | | | | |
| C0-10DD2E-D | | | | |
| C0-10DRE-D | | | | |
| C0-10ARE-D | | | | |
| C0-11DD1E-D | | | | |
| C0-11DD2E-D | | | | |
| C0-11DRE-D | | | | |
| C0-11ARE-D | | | | |
| C0-02DD1-D | 20 | No *ZIP*Links are available for analog PLC Units. | | |
| C0-02DD2-D | | | | |
| C0-02DR-D | | | | |

| CLICK PLC Discrete Input Module *ZIP*Link Selector | | | | |
|---|---|---|---|---|
| **I/O Module** | | ***ZIP*Link** | | |
| ***Input Module*** | ***# of Terms*** | ***Component*** | ***Module Part No.*** | ***Cable Part No.*** |
| C0-08ND3 | 11 | Feedthrough | ZL-RTB20 | ZL-C0-CBL11 * |
| C0-08ND3-1 | | | | |
| C0-08NE3 | | | | |
| C0-08NA | | | | |
| C0-16ND3 | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20 * |
| | | Sensor | ZL-LTB16-24 | |
| C0-16NE3 | 20 | Feedthrough | ZL-RTB20 | |
| | | Sensor | ZL-LTB16-24 | |

***1 Note: The C0-04TRS relay output is derated not to exceed 2A per point maximum when used with the ZIPLink wiring system.***

***2 Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.***
***To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit.***

| CLICK PLC Discrete Output Module *ZIP*Link Selector | | | | |
|---|---|---|---|---|
| **I/O Module** | | ***ZIP*Link** | | |
| ***Output Module*** | ***# of Terms*** | ***Component*** | ***Module Part No.*** | ***Cable Part No.*** |
| C0-08TD1 | 11 | Feedthrough | ZL-RTB20 | ZL-C0-CBL11 * |
| C0-08TD2 | | | | |
| C0-08TR | | | | |
| C0-08TA | | | | |
| C0-16TD1 | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20* |
| | | Fuse | ZL-RFU20 [2] | |
| | | Relay (sinking) | ZL-RRL16-24-1 | |
| C0-16TD2 | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20 * |
| | | Fuse | ZL-RFU20 [2] | |
| | | Relay (sourcing) | ZL-RRL16-24-2 | |
| C0-04TRS[1] | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20 * |

| CLICK PLC Combo I/O Module *ZIP*Link Selector | | | | |
|---|---|---|---|---|
| **I/O Module** | | ***ZIP*Link** | | |
| ***Combo Module*** | ***# of Terms*** | ***Component*** | ***Module Part No.*** | ***Cable Part No.*** |
| C0-16CDD1 | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20 * |
| C0-16CDD2 | | | | |
| C0-08CDR | 11 | Feedthrough | ZL-RTB20 | ZL-C0-CBL11 * |

| CLICK PLC Analog I/O Module *ZIP*Link Selector | | | | |
|---|---|---|---|---|
| **I/O Module** | | ***ZIP*Link** | | |
| ***Analog Module*** | ***# of Terms*** | ***Component*** | ***Module Part No.*** | ***Cable Part No.*** |
| C0-04AD-1 | 11 | Feedthrough | ZL-RTB20 | ZL-C0-CBL11 * |
| C0-04AD-2 | 11 | Feedthrough | ZL-RTB20 | ZL-C0-CBL11 * |
| C0-04RTD | 20 | No *ZIP*Links are available for RTD and thermocouple modules. | | |
| C0-04THM | 11 | | | |
| C0-04DA-1 | 11 | Feedthrough | ZL-RTB20 | ZL-C0-CBL11 * |
| C0-04DA-2 | 11 | Feedthrough | ZL-RTB20 | ZL-C0-CBL11 * |
| C0-4AD2DA-1 | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20 * |
| C0-4AD2DA-2 | 20 | Feedthrough | ZL-RTB20 | ZL-C0-CBL20 * |

**** Select the cable length by replacing the * with: Blank = 0.5m, -1 = 1.0m, or -2 = 2.0m.***

Company Information
Control Systems Overview
CLICK PLC
Do-More PLCs Overview
Do-More H2 PLC
Do-More T1H PLC
DirectLOGIC PLCs Overview
DirectLOGIC DL05/06
DirectLOGIC DL105
DirectLOGIC DL205
DirectLOGIC DL305
DirectLOGIC DL405
Productivity 2000
Productivity 3000
Universal Field I/O
Software
C-More HMI
C-More Micro HMI
ViewMarq Industrial Marquees
Other HMI
Communications
Appendix Book 1
Terms and Conditions